



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
*United States Patent and Trademark Office*  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/872,214	05/31/2001	Thomas P. Griego	31248-1001	2401
5179	7590	12/11/2003	EXAMINER	
PEACOCK MYERS AND ADAMS P C			MUTSCHLER, BRIAN L	
P O BOX 26927			ART UNIT	
ALBUQUERQUE, NM 871256927			PAPER NUMBER	
			1753	

DATE MAILED: 12/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/872,214	GRIEGO ET AL.	
	Examiner	Art Unit	
	Brian L. Mutschler	1753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 May 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____.  |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                             | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>see 6</u> . | 6) <input checked="" type="checkbox"/> Other: See Continuation Sheet.       |

Continuation of Attachment(s) 6). Other: IDS Paper Nos. 20010905 and 20030703.

## **DETAILED ACTION**

### ***Drawings***

1. The drawings are objected to because in Figure 12, reference sign “2” should be changed to --52--. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: **1, 5, 8, 9, 10, 12, 15, 16, 17, 18, 19, 41 and 57**, which appear in Figure 1. A proposed drawing correction, corrected drawings, or amendment to the specification to add the reference sign(s) in the description, are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Specification***

3. The disclosure is objected to because of the following informalities:
  - a. On page 14 at line 21, “46” should be changed to --48--.
  - b. On page 15 at line 20, “rim” should be changed to --flange--.Appropriate correction is required.

### ***Claim Objections***

4. Claims 2-4, 8, 11-15 and 17-21 objected to because of the following informalities:

- a. In claim 2 at line 6, please change "said electrodes" to --said plurality of electrodes-- to maintain consistent claim language; the electrodes are referred to as both "said electrodes" and "said plurality of electrodes" throughout the claims.
- b. In claim 3 at line 6, please change "said electrodes" to --said plurality of electrodes--.
- c. In claim 4 at line 1, please change "said wire wheel contact" to --said wire wheel electrical contact--.
- d. In claim 8 at line 6, please change "said to rim" to --said top rim--.
- e. In claim 11 at line 6, please change "said electrodes" to --said plurality of electrodes--.
- f. In claim 12 at line 2, please change "said electrodes" to --said plurality of electrodes--.
- g. In claim 13 at line 2, please change "said electrodes" to --said plurality of electrodes--.
- h. In claim 14 at line 6, please change "said electrodes" to --said plurality of electrodes--.
- i. In claim 15 at line 1, please change "said wire wheel contact" to --said wire wheel electrical contact--.
- j. In claim 17 at line 6, please change "said to rim" to --said top rim--.
- k. In claim 18 at line 11, please change "said to rim" to --said top rim--.

- l. In claim 19 at line 6, please change "said electrodes" to --said plurality of electrodes--.
- m. In claim 20 at line 6, please change "said electrodes" to --said plurality of electrodes--.
- n. In claim 21 at line 1, please change "said wire wheel contact" to --said wire wheel electrical contact--.

Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 3-5, 7, 8 and 10-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 3 recites the limitation "the underside" in line 5. There is insufficient antecedent basis for this limitation in the claim. It is suggested that the phrase be changed to --the undersurface--, which appears in line 3. The same applies to dependent claims 4 and 5.

Claim 5 recites the limitation "the substrate matter" in line 2. There is insufficient antecedent basis for this limitation in the claim. It is suggested that the phrase be changed to --the substrate material--.

Claim 5 recites the limitations "the portion" in line 3 and "said portion" in line 5. There is insufficient antecedent basis for this limitation in the claim. It is suggested that the first phrase be changed to --a portion--, which would also provide proper antecedent basis for the second phrase.

Claim 7 recites the limitation "said bowl" in lines 4 and 7. There is insufficient antecedent basis for this limitation in the claim. Since the structural limitations are defined with respect to the bowl, it was assumed that claim 7 should also include a bowl as recited in claim 2 for the purpose of examination.

Claim 8 recites the limitation "said bowl" in lines 2 and 3. There is insufficient antecedent basis for these limitations in the claim. As explained above, since the structural limitations are defined with respect to the bowl, it was assumed that claim 8 should include a bowl as recited in claim 2.

Claim 8 recites the limitation "the substrate material" in lines 7-8 and 9. There is insufficient antecedent basis for this limitation in the claim. It is suggested that the first occurrence of the phrase be changed to --substrate material--.

Claim 10 recites the limitation "said bowl" in lines 4 and 7. There is insufficient antecedent basis for this limitation in the claim. As explained above, since the structural limitations are defined with respect to the bowl, it was assumed that claim 10 should include a bowl as recited in claim 11. The same applies to dependent claims 11-17.

Claim 14 recites the limitation "the underside" in line 5. There is insufficient antecedent basis for this limitation in the claim. It is suggested that the phrase be changed to --the undersurface--. The same applies to dependent claims 15-17.

Claim 16 recites the limitation "the substrate matter" in line 2. There is insufficient antecedent basis for this limitation in the claim. It is suggested that the phrase be changed to --the substrate material--. The same applies to dependent claim 17.

Claim 16 recites the limitations "the portion" in line 3 and "said portion" in line 5. There is insufficient antecedent basis for this limitation in the claim. It is suggested that the first phrase be changed to --a portion--, which would provide proper antecedent basis for the second phrase. The same applies to dependent claim 17.

Claim 18 recites the limitation "said bowl" in lines 6 and 8. There is insufficient antecedent basis for this limitation in the claim. As explained above, since the structural limitations are defined with respect to the bowl, it was assumed that claim 18 should include a bowl as recited in claim 19. The same applies to dependent claims 19-24.

Claim 18 recites the limitation "the substrate material" in lines 10 and 11. There is insufficient antecedent basis for this limitation in the claim. It is suggested that the first occurrence of the phrase be changed to --substrate material--. The same applies to dependent claims 19-24.

Claim 20 recites the limitation "the underside" in line 5. There is insufficient antecedent basis for this limitation in the claim. It is suggested that the phrase be changed to --the undersurface--. The same applies to dependent claims 21 and 22.

Claim 22 recites the limitation "the substrate matter" in line 2. There is insufficient antecedent basis for this limitation in the claim. It is suggested that the phrase be changed to --the substrate material--.



Claim 22 recites the limitations "the portion" in line 3 and "said portion" in line 5. There is insufficient antecedent basis for this limitation in the claim. It is suggested that the first phrase be changed to --a portion--, which will provide proper antecedent basis for the second phrase.

Claim 24 recites the limitation "said bowl" in lines 4 and 7. There is insufficient antecedent basis for this limitation in the claim. As explained above, since the structural limitations are defined with respect to the bowl, it was assumed that claim 24 should include a bowl as recited in claim 19.

### ***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 6, 7, 9 and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Hojyo (U.S. Pat. No. 3,425,926).

Regarding claims 1 and 9, Hojyo discloses a rotary flow-through electrodeposition apparatus comprising a platen (table) **4**, upon which an electrolytic cell (tank) **5** is mounted (fig. 1; col. 2, lines 16-28). The electrolytic cell **5** contains an electrode assembly having a cathode portion **8** and an anode portion **9** (fig. 1; col. 2, lines 29-36). The electrolytic cell **5** undergoes planetary motion by revolving around two parallel axes (col. 2, line 67 to col. 3, line 2).

Regarding claims 6 and 9, the apparatus comprises means for imparting rotary motion using a power source to rotate a shaft **20** (col. 2, line 60 to col. 3, line 2).

Regarding claims 7 and 10, the platen **4** is mounted to a fixed shaft **20** (fig. 1). A drive gear (pinion) **21** is fixed on the shaft **20** and meshes with a planetary gear **22** (fig. 1; col. 2, lines 60-66).

Since Hojyo teaches all of the structural limitations recited in the instant claims, the reference is deemed to be anticipatory.

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 2 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hojyo (U.S. Pat. No. 3,425,926) in view of Ransohoff (U.S. Pat. No. 2,865,831).

Hojyo discloses a rotary flow-through electrodeposition apparatus comprising a platen (table) **4**, upon which an electrolytic cell (tank) **5** is mounted (fig. 1; col. 2, lines 16-28). The electrolytic cell **5** contains an electrode assembly having a cathode portion **8** and an anode portion **9** (fig. 1; col. 2, lines 29-36). The electrolytic cell **5** undergoes planetary motion by revolving around two parallel axes (col. 2, line 67 to col. 3, line 2). The apparatus comprises means for imparting rotary motion using a power source to rotate a shaft **20** (col. 2, line 60 to col. 3, line 2). The platen **4** is mounted to a fixed

shaft **20** (fig. 1). A drive gear (pinion) **21** is fixed on the shaft **20** and meshes with a planetary gear **22** (fig. 1; col. 2, lines 60-66).

Regarding claims 2 and 11, the apparatus of Hojyo comprises a bowl (electrolytic tank **5**) that holds an electrolytic solution and substrate material to be plated (figs. 1 and 2).

The apparatus of Hojyo differs from the instant invention because Hojyo does not disclose the following:

- a. A plurality of electrodes and means for serially applying electrical potential sequentially to the electrodes as the cell rotates, as recited in claims 2 and 11.
- b. Electrical potential is applied sequentially to individual ones of the electrodes, as recited in claim 12. (This is a method limitation.)
- c. Electrical potential is applied sequentially to interconnected groups of electrodes, as recited in claim 13. (This is a method limitation.)

Regarding claims 2 and 11-13, Ransohoff discloses a rotary electroplating machine comprising a plurality of cathode electrodes (col. 1, lines 58-59). Ransohoff further teaches that the electrodes should be connected sequentially so that only the cathodes in contact with the substrates to be plated are connected, while the cathodes not in contact with the substrates are disconnected.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the electrode in the apparatus of Hojyo to use a plurality of electrodes that are sequentially connected as taught by Ransohoff because

utilizing a plurality of electrodes and connecting them sequentially allows the apparatus to be run more efficiently by connecting only those electrodes in contact with the substrate.

11. Claims 3-5 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hojyo (U.S. Pat. No. 3,425,926) in view of Ransohoff (U.S. Pat. No. 2,865,831), as applied above to claims 2 and 11-13, and further in view of Colombier et al. (US 2002/0139685).

Hojyo and Ransohoff describe an apparatus having the limitations recited in claim 2 and 11-13 of the instant invention, as explained above in section 10.

Additionally, regarding claims 3, 4, 14 and 15, Ransohoff uses brush contacts **46**, which are collinear with the axis of rotation, to make sequential contact with the plurality of electrodes (col. 6, lines 2-6).

Regarding claims 5 and 16, which recite an intended use of the apparatus, Hojyo discloses that the substrate material is collected by centrifugal force at a portion maximally distanced from the axis of the shaft **20**, while rotation of the cell **5** would agitate and tumble the substrate material (fig. 3; col. 3, lines 3-27).

The apparatus described by Hojyo and Ransohoff differs from the instant invention because they do not disclose the use of a wire wheel electrical contact, as recited in claims 3 and 14.

Regarding claims 3 and 14, Colombier et al. disclose an electroplating apparatus and teach that mechanical electrical contact may be made using "rollers, wheels, friction contacts or brushes" (par. [0032]).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the brush contacts in the apparatus described by Hojyo and Ransohoff to use a wire wheel electrical contact because Colombier et al. teach that wheel contacts and brush contacts may be equivalently used to make mechanical electrical connections.

12. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hojyo (U.S. Pat. No. 3,425,926) in view of Ransohoff (U.S. Pat. No. 2,865,831), as applied above to claims 2 and 11-13, and further in view of Griego et al. (U.S. Pat. No. 5,565,079) and Birkle et al. (U.S. Pat. No. 4,701,248).

Hojyo and Ransohoff describe an apparatus having the limitations recited in claim 2 and 11-13 of the instant invention, as explained above in section 10.

The apparatus described by Hojyo and Ransohoff differs from the instant invention because they do not disclose the following:

- a. A dome wall having a lower rim flange connectable to the bowl and an annular top rim defining a port, as recited in claim 8.
- b. A helical auger flange on the inside of the dome wall spiraling from the rim flange to the top rim, as recited in claim 8.

Griego et al. disclose a rotary flow-through electroplating apparatus comprising a dome wall **56** having an open top (fig. 3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the apparatus described by Hojyo and Ransohoff to use a dome wall as taught by Griego et al. because the dome wall of Griego et al. would allow the easy removal and delivery of the substrate material by using its open top while also containing the substrate material within the plating area by virtue of the slanted walls.

Birkle et al. disclose an electroplating device for the treatment of a plurality of substrates using an auger, which provides "a guaranteed simple removal" and a high output (figure; col. 3, lines 8-14). Birkle et al. also teach that other known devices for the movement of goods through an electroplating device comprise a screw conveyor (auger) on an inside wall (col. 1, lines 35-46).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the apparatus described by Hojyo and Ransohoff to use an auger as taught by Birkle et al. because an auger simplifies the removal of the plated articles and yields a high output.

13. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hojyo (U.S. Pat. No. 3,425,926) in view of Ransohoff (U.S. Pat. No. 2,865,831) and Colombier

et al. (US 2002/0139685), as applied above to claims 3-5 and 14-16, and further in view of Griego et al. (U.S. Pat. No. 5,565,079) and Birkle et al. (U.S. Pat. No. 4,701,248).

Hojyo, Ransohoff and Colombier et al. describe an apparatus having the limitations recited in claim 3-5 and 14-16 of the instant invention, as explained above in section 11.

The apparatus described by Hojyo, Ransohoff and Colombier et al. differs from the instant invention because they do not disclose the following:

- a. A dome wall having a lower rim flange connectable to the bowl and an annular top rim defining a port, as recited in claim 8.
- b. A helical auger flange on the inside of the dome wall spiraling from the rim flange to the top rim, as recited in claim 8.

Griego et al. disclose a rotary flow-through electroplating apparatus comprising a dome wall **56** having an open top (fig. 3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the apparatus described by Hojyo, Ransohoff and Colombier et al. to use a dome wall as taught by Griego et al. because the dome wall of Griego et al. would allow the easy removal and delivery of the substrate material by using its open top while also containing the substrate material within the plating area by virtue of the slanted walls.

Birkle et al. disclose an electroplating device for the treatment of a plurality of substrates using an auger, which provides "a guaranteed simple removal" and a high

Art Unit: 1753

output (figure; col. 3, lines 8-14). Birkle et al. also teach that other known devices for the movement of goods through an electroplating device comprise a screw conveyor (auger) on an inside wall (col. 1, lines 35-46).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the apparatus described by Hojyo, Ransohoff and Colombier et al. to use an auger as taught by Birkle et al. because an auger simplifies the removal of the plated articles and yields a high output.

14. Claims 18, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hojyo (U.S. Pat. No. 3,425,926) in view of Griego et al. (U.S. Pat. No. 5,565,079) and Birkle et al. (U.S. Pat. No. 4,701,248).

Regarding claim 18, Hojyo discloses a rotary flow-through electrodeposition apparatus comprising a platen (table) **4**, upon which an electrolytic cell (tank) **5** is mounted (fig. 1; col. 2, lines 16-28). The electrolytic cell **5** contains an electrode assembly having a cathode portion **8** and an anode portion **9** (fig. 1; col. 2, lines 29-36). The electrolytic cell **5** undergoes planetary motion by revolving around two parallel axes (col. 2, line 67 to col. 3, line 2). The apparatus of Hojyo comprises a bowl (electrolytic tank **5**) that holds an electrolytic solution and substrate material to be plated (figs. 1 and 2).

Regarding claims 23 and 24, the apparatus comprises means for imparting rotary motion using a power source to rotate a shaft **20** (col. 2, line 60 to col. 3, line 2). The



platen **4** is mounted to a fixed shaft **20** (fig. 1). A drive gear (pinion) **21** is fixed on the shaft **20** and meshes with a planetary gear **22** (fig. 1; col. 2, lines 60-66).

The apparatus of Hojyo differs from the instant invention because Hojyo does not disclose the following:

- a. A dome wall having a lower rim flange connectable to the bowl and an annular top rim defining a port, as recited in claim 8.
- b. A helical auger flange on the inside of the dome wall spiraling from the rim flange to the top rim, as recited in claim 8.

Griego et al. disclose a rotary flow-through electroplating apparatus comprising a dome wall **56** having an open top (fig. 3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the apparatus of Hojyo to use a dome wall as taught by Griego et al. because the dome wall of Griego et al. would allow the easy removal and delivery of the substrate material by using its open top while also containing the substrate material within the plating area by virtue of the slanted walls.

Birkle et al. disclose an electroplating device for the treatment of a plurality of substrates using an auger, which provides "a guaranteed simple removal" and a high output (figure; col. 3, lines 8-14). Birkle et al. also teach that other known devices for the movement of goods through an electroplating device comprise a screw conveyor (auger) on an inside wall (col. 1, lines 35-46).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the apparatus of Hojyo to use an auger as taught by Birkle et al. because an auger simplifies the removal of the plated articles and yields a high output.

15. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hojyo (U.S. Pat. No. 3,425,926) in view of Griego et al. (U.S. Pat. No. 5,565,079) and Birkle et al. (U.S. Pat. No. 4,701,248), as applied above to claims 18, 23 and 24, and further in view of Ransohoff (U.S. Pat. No. 2,865,831).

Hojyo, Griego et al. and Birkle et al. describe an apparatus having the limitations recited in claims 18, 23 and 24 of the instant invention, as explained above in section 14.

The apparatus described by Hojyo, Griego et al. and Birkle et al. differs from the instant invention because they do not disclose a plurality of electrodes and means for serially applying electrical potential sequentially to the electrodes as the cell rotates, as recited in claim 19.

Ransohoff discloses a rotary electroplating machine comprising a plurality of cathode electrodes (col. 1, lines 58-59). Ransohoff further teaches that the electrodes should be connected sequentially so that only the cathodes in contact with the substrates to be plated are connected, while the cathodes not in contact with the substrates are disconnected.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the electrode in the apparatus of Hojyo, Griego et al. and Birkle et al. to use a plurality of electrodes that are sequentially connected as taught by Ransohoff because utilizing a plurality of electrodes and connecting them sequentially allows the apparatus to be run more efficiently by connecting only those electrodes in contact with the substrate.

16. Claims 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hojyo (U.S. Pat. No. 3,425,926) in view of Griego et al. (U.S. Pat. No. 5,565,079), Birkle et al. (U.S. Pat. No. 4,701,248) and Ransohoff (U.S. Pat. No. 2,865,831), as applied above to claim 19, and further in view of Colombier et al. (US 2002/0139685).

Hojyo, Griego et al., Birkle et al. and Ransohoff describe an apparatus having the limitations recited in claim 19 of the instant invention, as explained above in section 14.

Additionally, Ransohoff uses brush contacts **46**, which are collinear with the axis of rotation, to make sequential contact with the plurality of electrodes (col. 6, lines 2-6).

Regarding claim 22, which recites an intended use of the apparatus, Hojyo discloses that the substrate material is collected by centrifugal force at a portion maximally distanced from the axis of the shaft **20**, while rotation of the cell **5** would agitate and tumble the substrate material (fig. 3; col. 3, lines 3-27).

The apparatus described by Hojyo, Griego et al., Birkle et al. and Ransohoff differs from the instant invention because they do not disclose the use of a wire wheel electrical contact, as recited in claim 20.

Colombier et al. disclose an electroplating apparatus and teach that mechanical electrical contact may be made using "rollers, wheels, friction contacts or brushes" (par. [0032]).

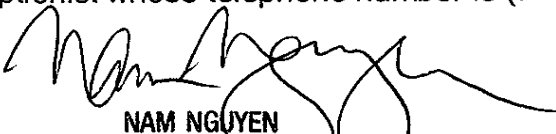
It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the brush contacts in the apparatus described by Hojyo, Griego et al., Birkle et al. and Ransohoff to use a wire wheel electrical contact because Colombier et al. teach that wheel contacts and brush contacts may be equivalently used to make mechanical electrical connections.

### ***Conclusion***

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian L. Mutschler whose telephone number is (703) 305-0180. The examiner can normally be reached on Monday-Friday from 7:30am to 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (703) 308-3322. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

  
NAM NGUYEN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700

blm  
December 5, 2003